FIG.1

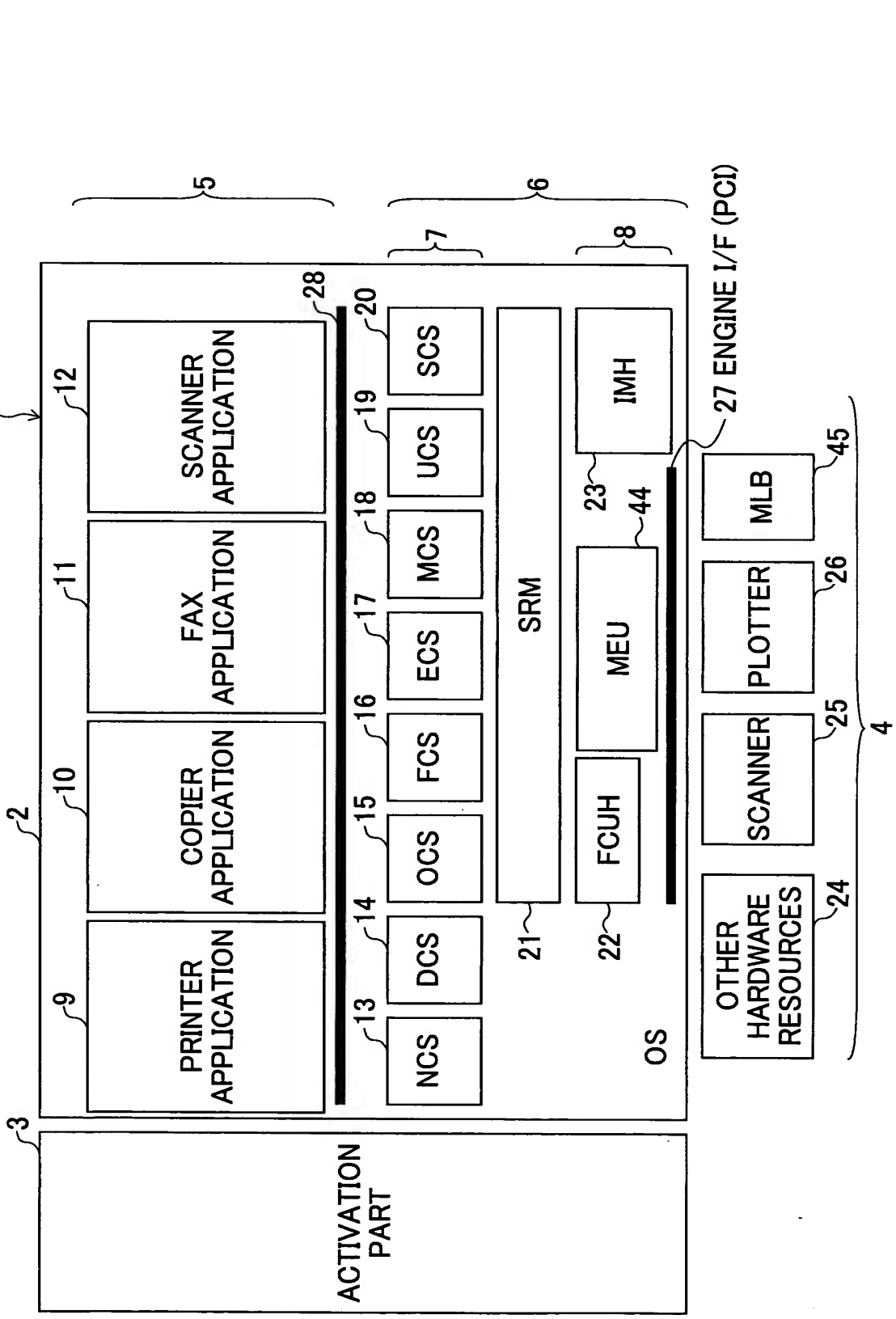

1 MULTIFUNCTIONAL PRODUCT
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27 ENGINE I/F (PCI)
28
PRINTER APPLICATION
COPIER APPLICATION
FAX APPLICATION
SCANNER APPLICATION
NCS
DCS
OCS
FCS
ECS
MCS
UCS
SCS
SRM
FCUH
MEU
IMH
OS
ACTIVATION PART
OTHER HARDWARE RESOURCES
SCANNER
PLOTTER
MLB
44
45

FIG.2

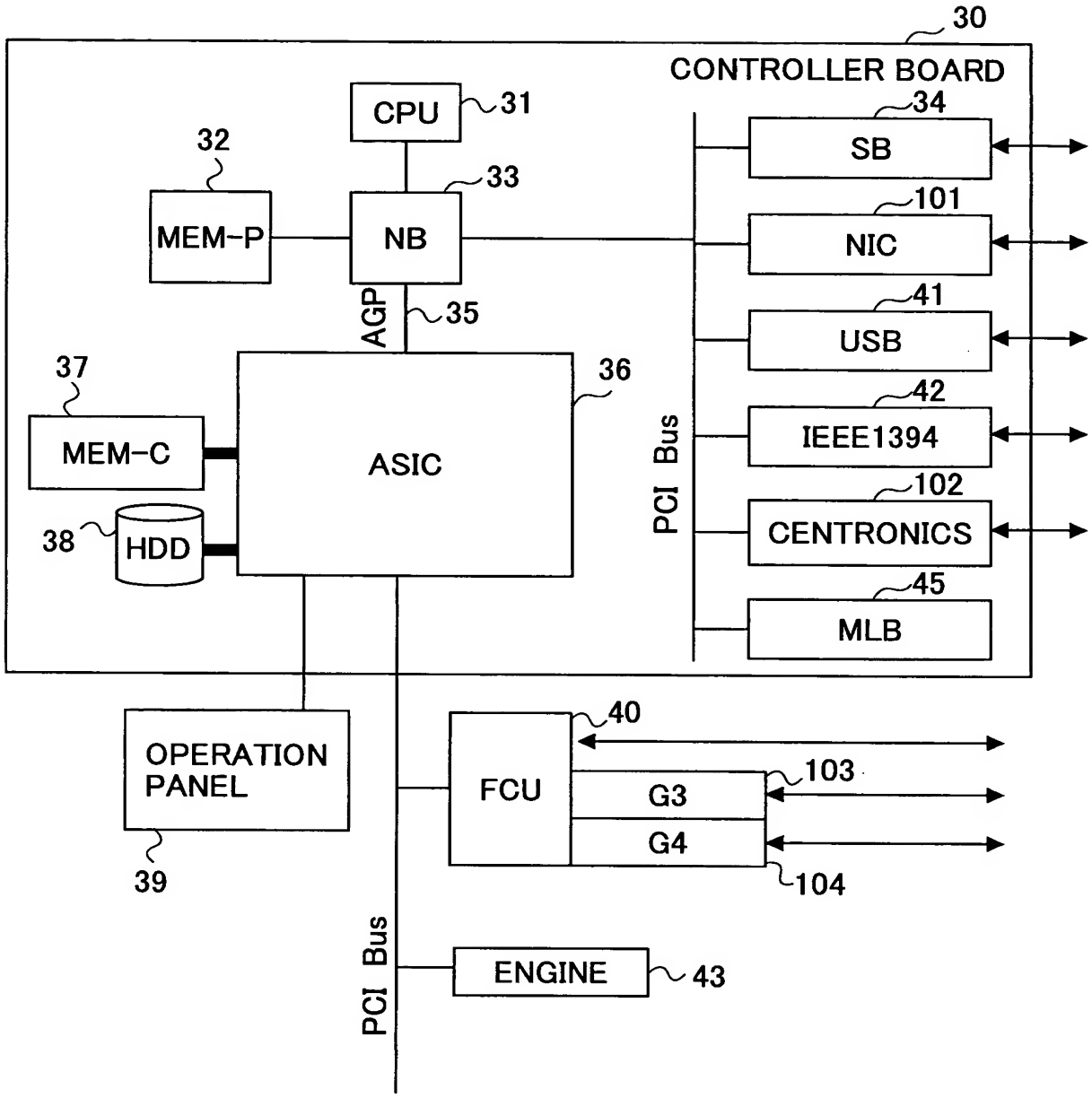

30
CONTROLLER BOARD
CPU
31
32
33
MEM-P
NB
AGP
35
37
36
MEM-C
ASIC
38
HDD
PCI Bus
34
SB
101
NIC
41
USB
42
IEEE1394
102
CENTRONICS
45
MLB
OPERATION PANEL
39
FCU
40
G3
G4
103
104
PCI Bus
ENGINE
43

FIG.3

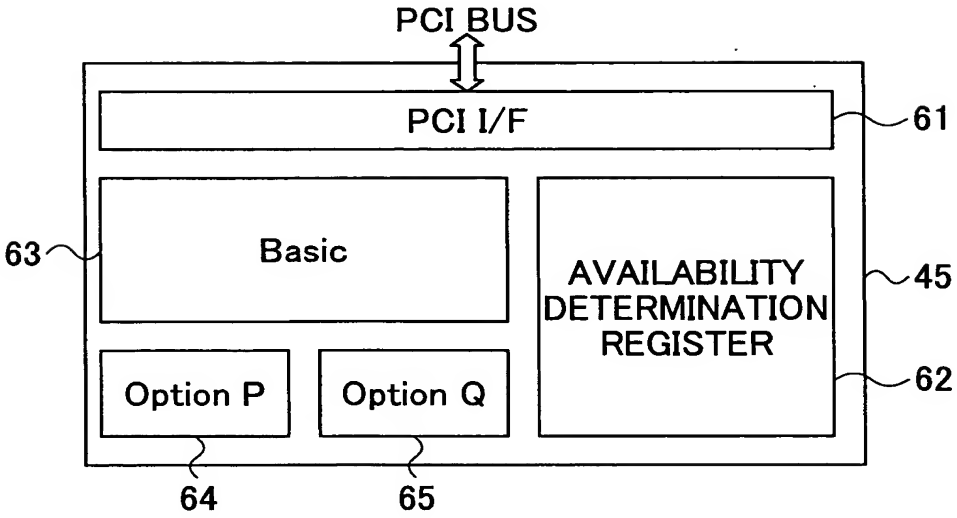

PCI BUS
PCI I/F
61
63
Basic
AVAILABILITY DETERMINATION REGISTER
45
62
Option P
Option Q
64
65

FIG.4

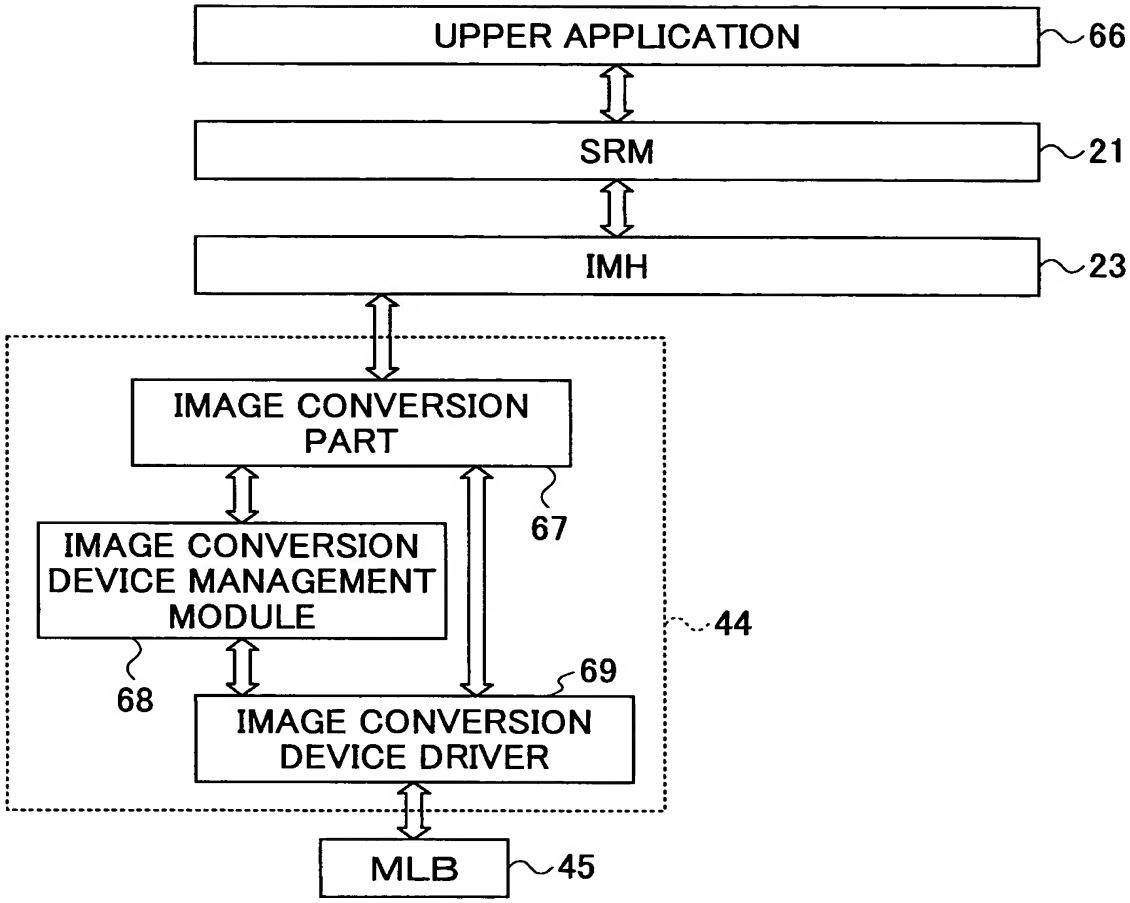

UPPER APPLICATION
66
SRM
21
IMH
23
IMAGE CONVERSION PART
67
IMAGE CONVERSION DEVICE MANAGEMENT MODULE
68
69
IMAGE CONVERSION DEVICE DRIVER
44
MLB
45

FIG.5

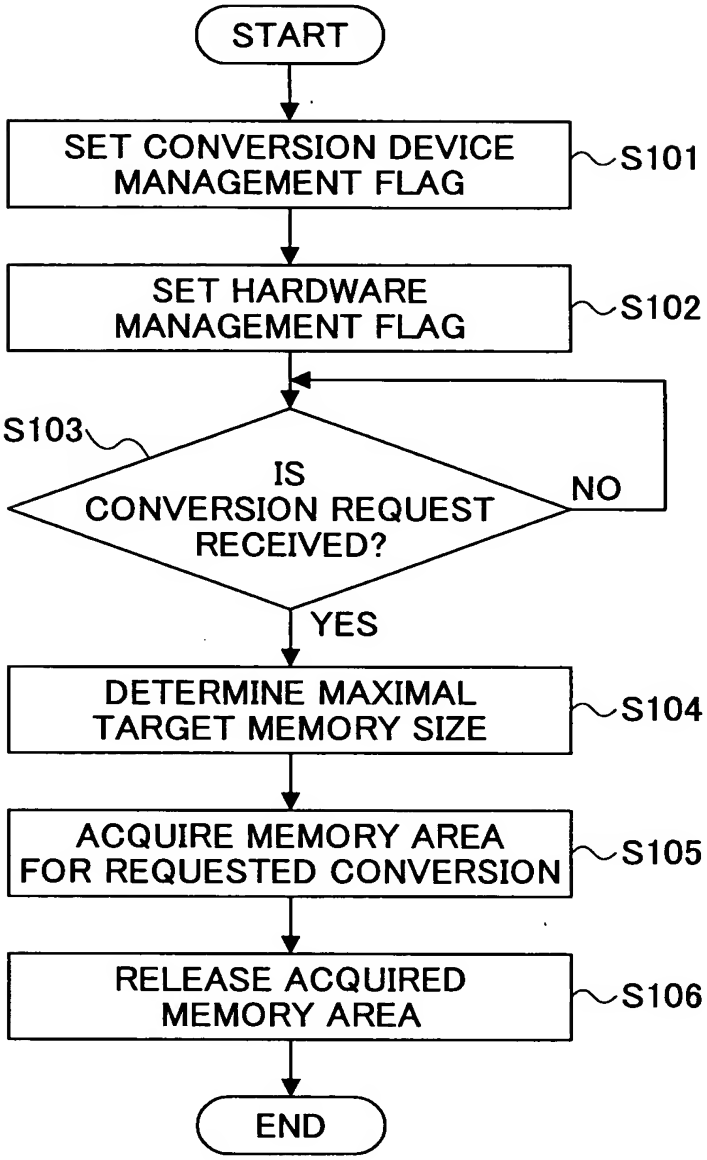

START
SET CONVERSION DEVICE MANAGEMENT FLAG
S101
SET HARDWARE MANAGEMENT FLAG
S102
S103
IS CONVERSION REQUEST RECEIVED?
NO
YES
DETERMINE MAXIMAL TARGET MEMORY SIZE
S104
ACQUIRE MEMORY AREA FOR REQUESTED CONVERSION
S105
RELEASE ACQUIRED MEMORY AREA
S106
END

FIG.6

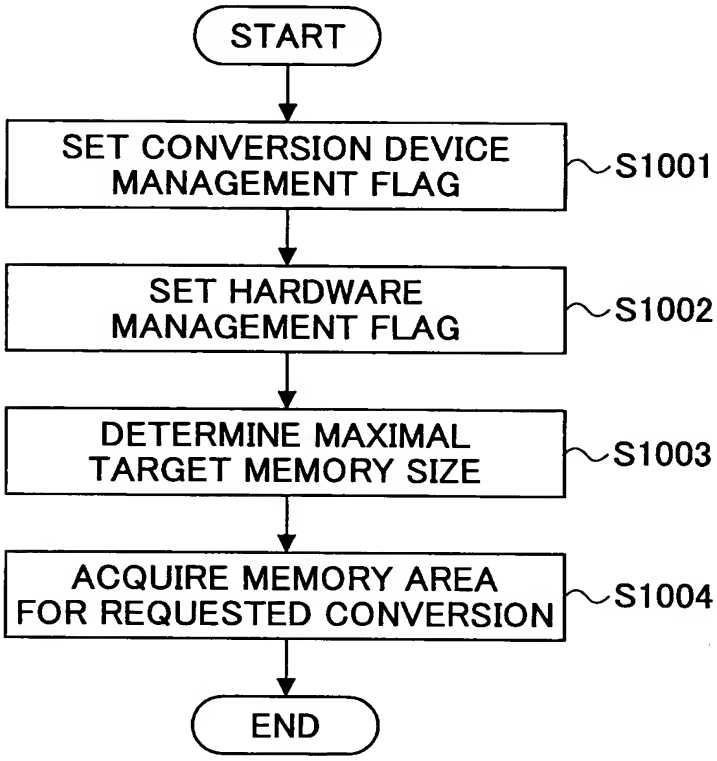

START
SET CONVERSION DEVICE MANAGEMENT FLAG
S1001
SET HARDWARE MANAGEMENT FLAG
S1002
DETERMINE MAXIMAL TARGET MEMORY SIZE
S1003
ACQUIRE MEMORY AREA FOR REQUESTED CONVERSION
S1004
END

FIG.7

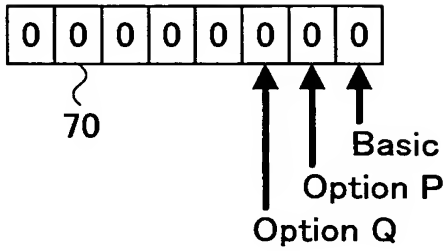


FIG.8A

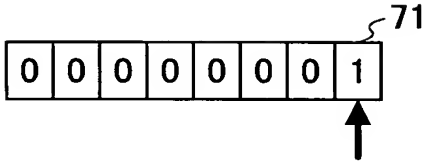


FIG.8B

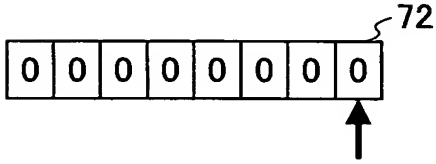


FIG.9A

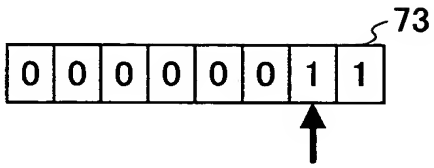


FIG.9B

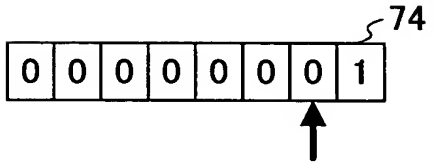


FIG.10A

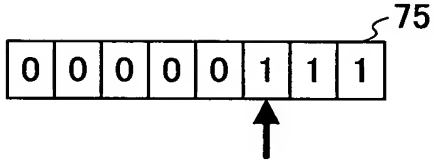


FIG.10B

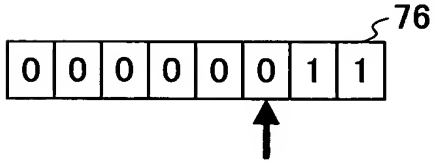


FIG.11

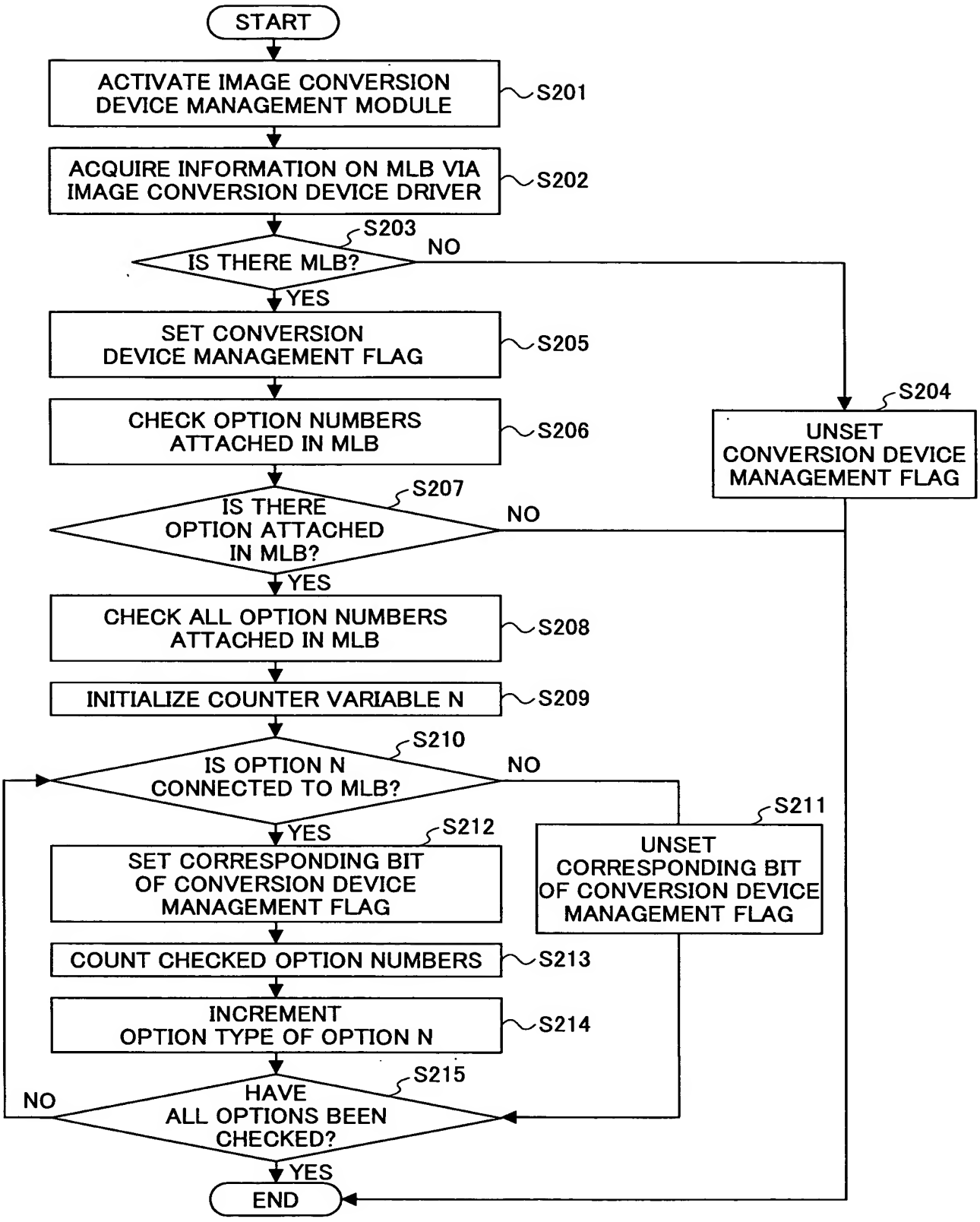

START
ACTIVATE IMAGE CONVERSION DEVICE MANAGEMENT MODULE
S201
ACQUIRE INFORMATION ON MLB VIA IMAGE CONVERSION DEVICE DRIVER
S202
S203
IS THERE MLB?
NO
YES
SET CONVERSION DEVICE MANAGEMENT FLAG
S205
CHECK OPTION NUMBERS ATTACHED IN MLB
S206
S204
UNSET CONVERSION DEVICE MANAGEMENT FLAG
S207
IS THERE OPTION ATTACHED IN MLB?
NO
YES
CHECK ALL OPTION NUMBERS ATTACHED IN MLB
S208
INITIALIZE COUNTER VARIABLE N
S209
S210
IS OPTION N CONNECTED TO MLB?
NO
YES
S211
UNSET CORRESPONDING BIT OF CONVERSION DEVICE MANAGEMENT FLAG
S212
SET CORRESPONDING BIT OF CONVERSION DEVICE MANAGEMENT FLAG
COUNT CHECKED OPTION NUMBERS
S213
INCREMENT OPTION TYPE OF OPTION N
S214
S215
HAVE ALL OPTIONS BEEN CHECKED?
NO
YES
END

FIG.12

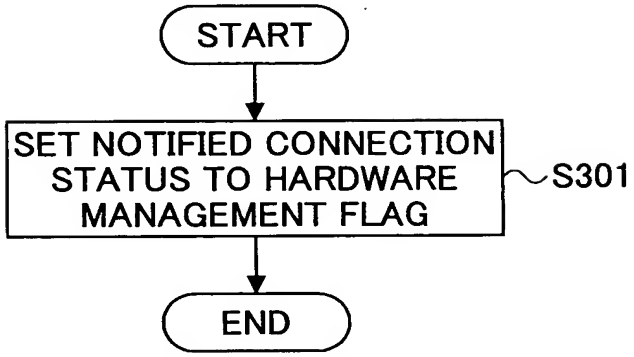
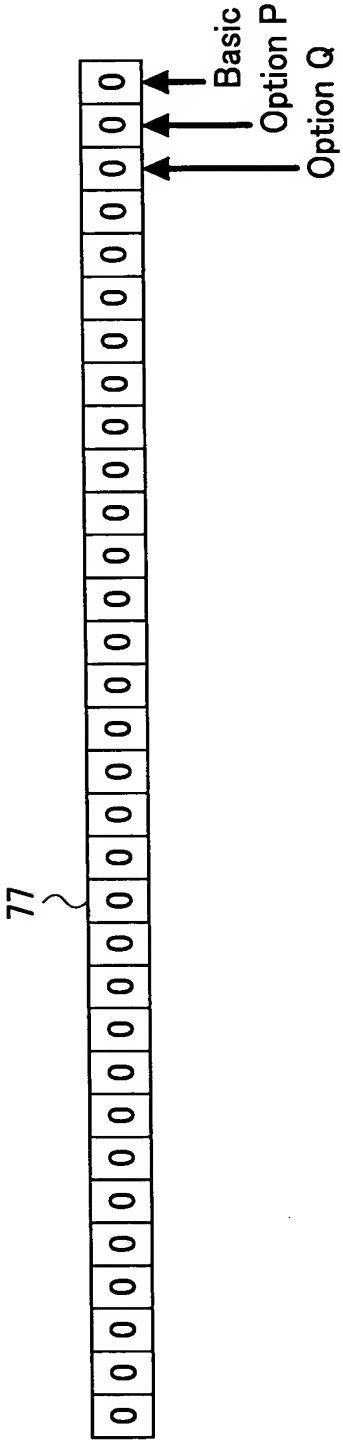
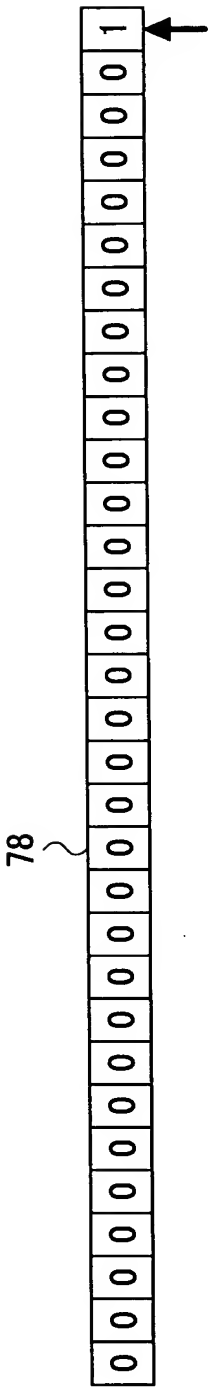

START
SET NOTIFIED CONNECTION STATUS TO HARDWARE MANAGEMENT FLAG
S301
END

FIG.13


Basic
Option P
Option Q
77
0
0
0


78
1
0
0
0

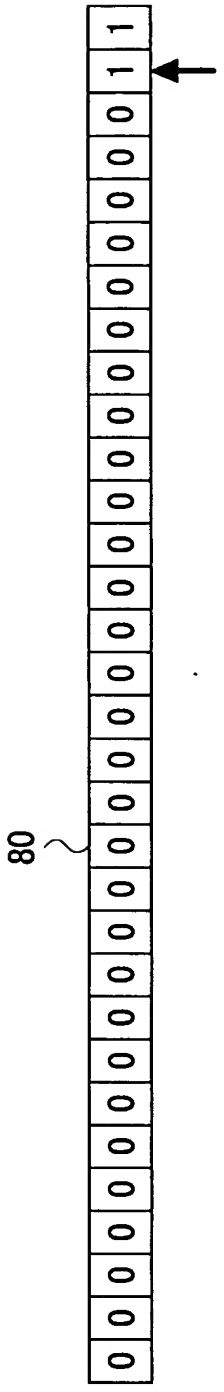


FIG.15A

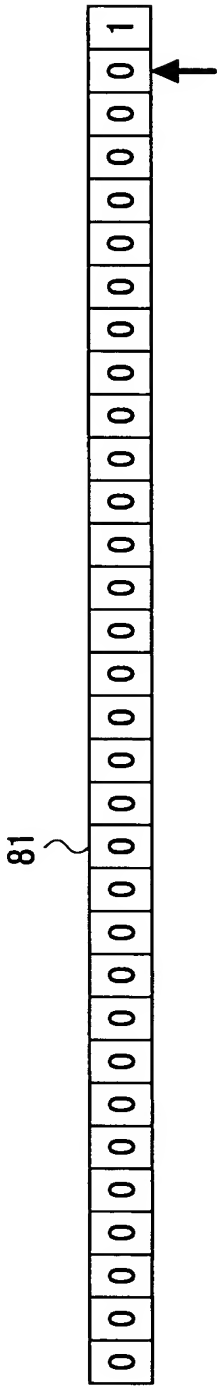


FIG.15B

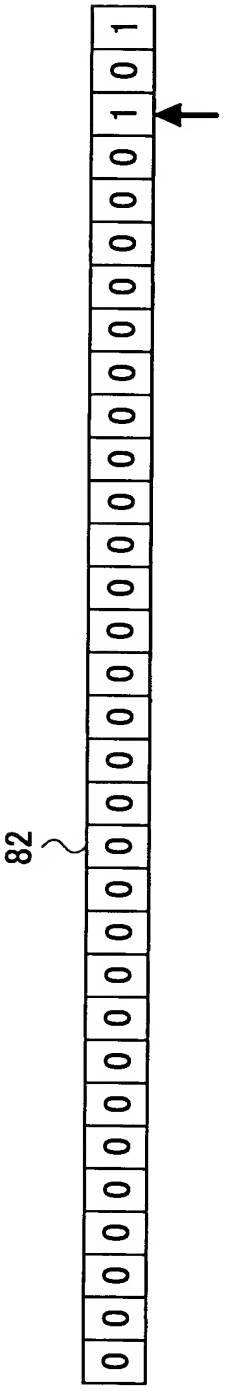


FIG.16A

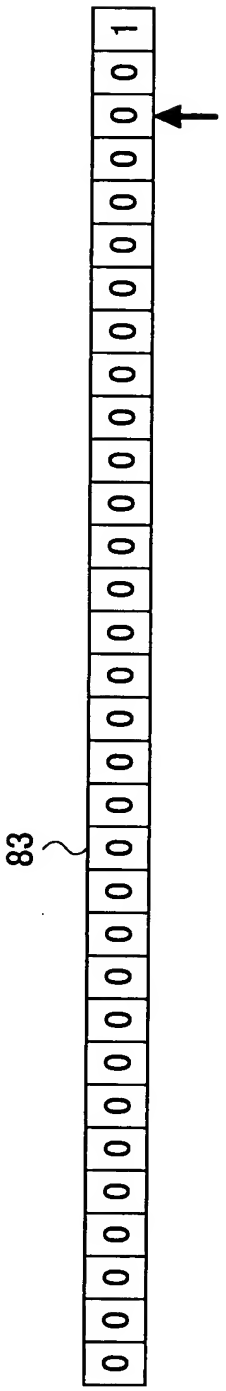


FIG.16B

FIG.17

	CONNECTION STATUS			
	Basic	Option P	Option Q	MEMORY SIZE
Type A	○	○	○	9M
Type B	○	○	×	7M
Type C	○	×	○	6M
Type D	○	×	×	4M
Type E	×	×	×	32k

FIG.18

	Basic	Option P	Option Q
Format A	○	○	×
Format B	○	×	×
Format C	○	○	×
Format D	○	×	×
Format E	○	×	○
Format F	○	×	○

FIG.19

Format A	Format B	Format C	Format D	Format E
7M	4M	7M	4M	6M

FIG.20

Format A	Format B	Format C	Format D	Format E
32k	64k	128k	64k	32k

FIG.21

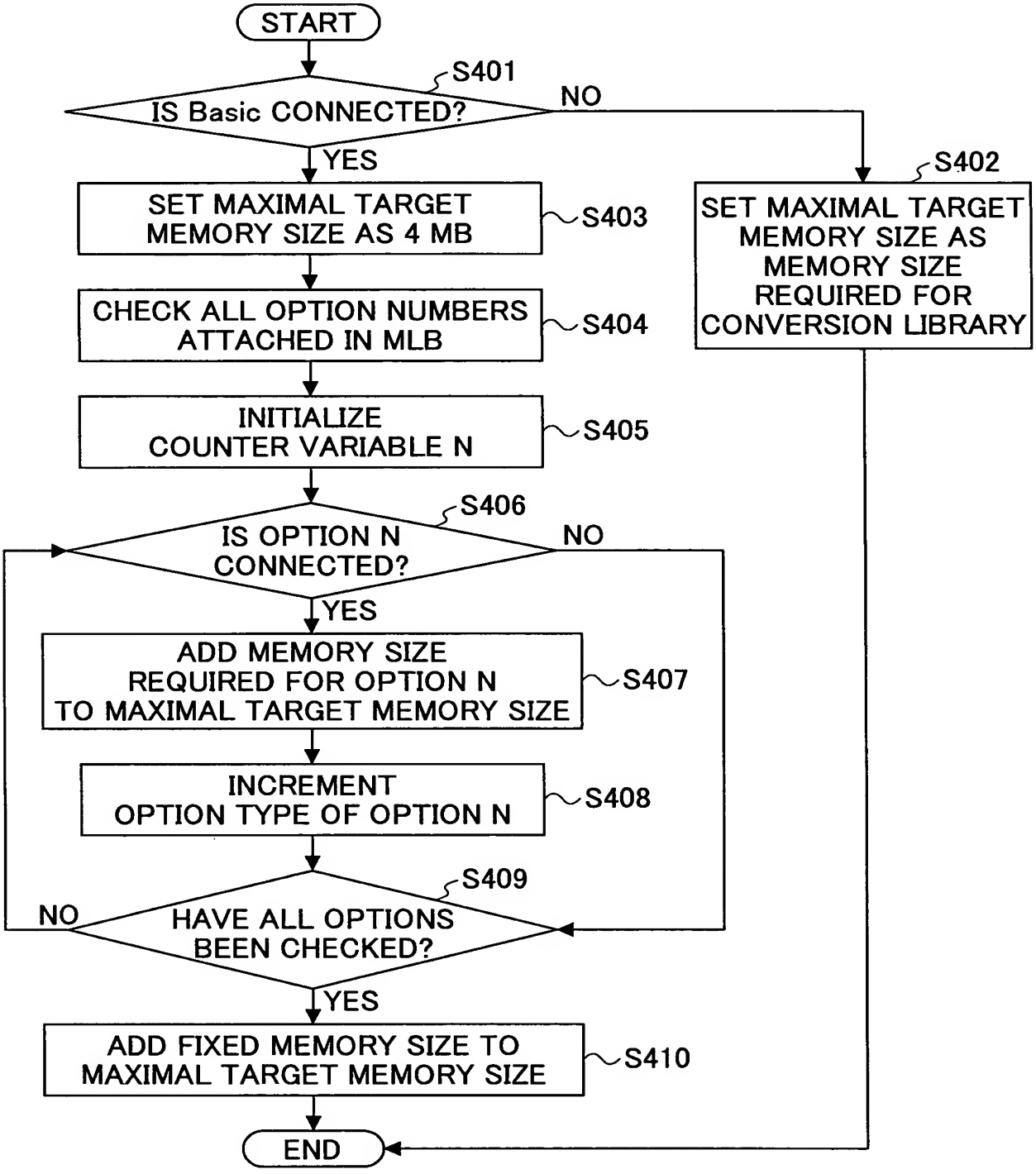

START
S401
IS Basic CONNECTED?
NO
YES
S402
SET MAXIMAL TARGET MEMORY SIZE AS MEMORY SIZE REQUIRED FOR CONVERSION LIBRARY
SET MAXIMAL TARGET MEMORY SIZE AS 4 MB
S403
CHECK ALL OPTION NUMBERS ATTACHED IN MLB
S404
INITIALIZE COUNTER VARIABLE N
S405
S406
IS OPTION N CONNECTED?
NO
YES
ADD MEMORY SIZE REQUIRED FOR OPTION N TO MAXIMAL TARGET MEMORY SIZE
S407
INCREMENT OPTION TYPE OF OPTION N
S408
S409
NO
HAVE ALL OPTIONS BEEN CHECKED?
YES
ADD FIXED MEMORY SIZE TO MAXIMAL TARGET MEMORY SIZE
S410
END

FIG.22

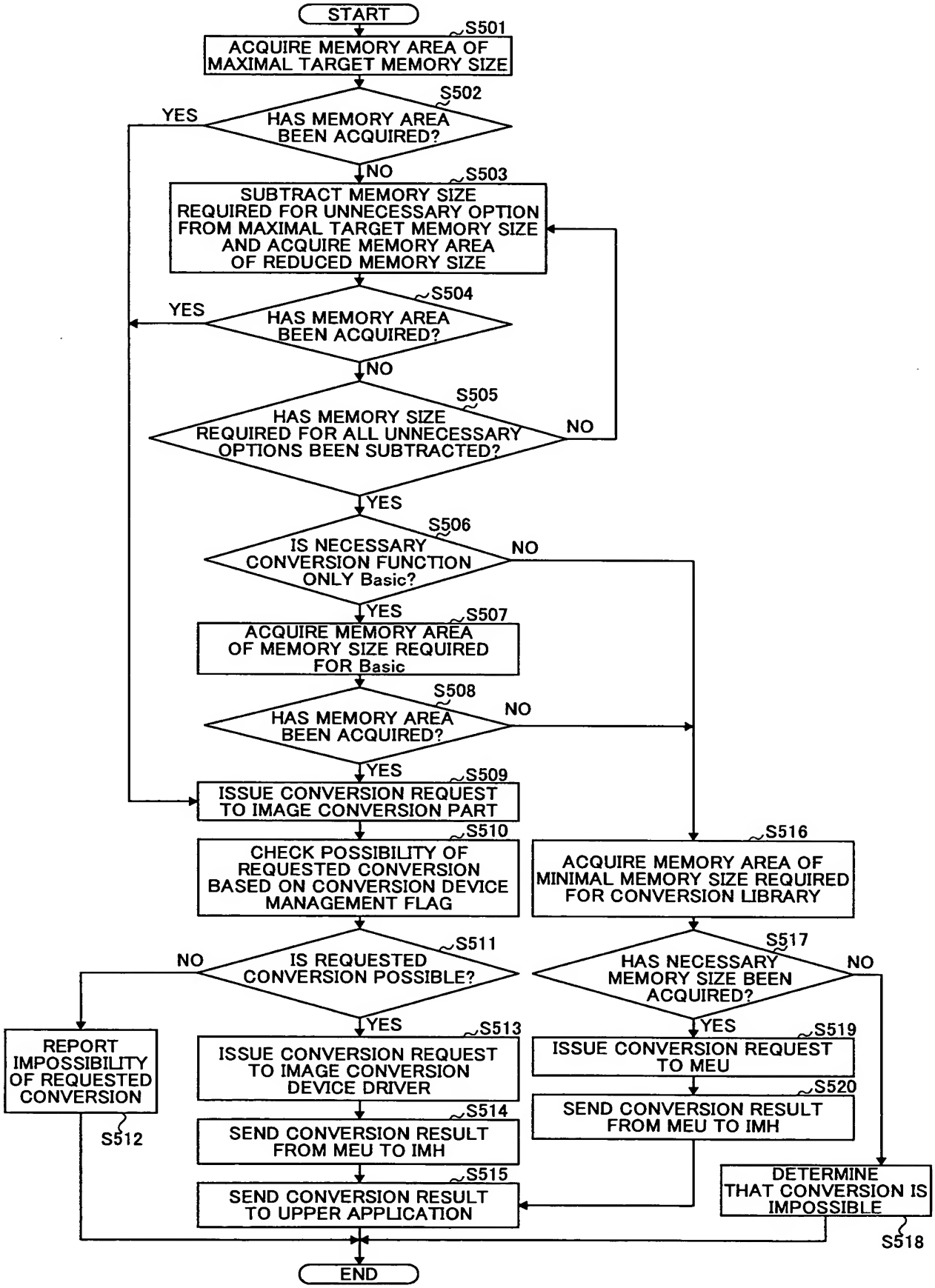

START
S501
ACQUIRE MEMORY AREA OF MAXIMAL TARGET MEMORY SIZE
S502
HAS MEMORY AREA BEEN ACQUIRED?
YES
NO
S503
SUBTRACT MEMORY SIZE REQUIRED FOR UNNECESSARY OPTION FROM MAXIMAL TARGET MEMORY SIZE AND ACQUIRE MEMORY AREA OF REDUCED MEMORY SIZE
S504
HAS MEMORY AREA BEEN ACQUIRED?
YES
NO
S505
HAS MEMORY SIZE REQUIRED FOR ALL UNNECESSARY OPTIONS BEEN SUBTRACTED?
NO
YES
S506
IS NECESSARY CONVERSION FUNCTION ONLY Basic?
NO
YES
S507
ACQUIRE MEMORY AREA OF MEMORY SIZE REQUIRED FOR Basic
S508
HAS MEMORY AREA BEEN ACQUIRED?
NO
YES
S509
ISSUE CONVERSION REQUEST TO IMAGE CONVERSION PART
S510
CHECK POSSIBILITY OF REQUESTED CONVERSION BASED ON CONVERSION DEVICE MANAGEMENT FLAG
S511
IS REQUESTED CONVERSION POSSIBLE?
NO
YES
REPORT IMPOSSIBILITY OF REQUESTED CONVERSION
S512
S513
ISSUE CONVERSION REQUEST TO IMAGE CONVERSION DEVICE DRIVER
S514
SEND CONVERSION RESULT FROM MEU TO IMH
S515
SEND CONVERSION RESULT TO UPPER APPLICATION
S516
ACQUIRE MEMORY AREA OF MINIMAL MEMORY SIZE REQUIRED FOR CONVERSION LIBRARY
S517
HAS NECESSARY MEMORY SIZE BEEN ACQUIRED?
NO
YES
S519
ISSUE CONVERSION REQUEST TO MEU
S520
SEND CONVERSION RESULT FROM MEU TO IMH
DETERMINE THAT CONVERSION IS IMPOSSIBLE
S518
END

FIG.23

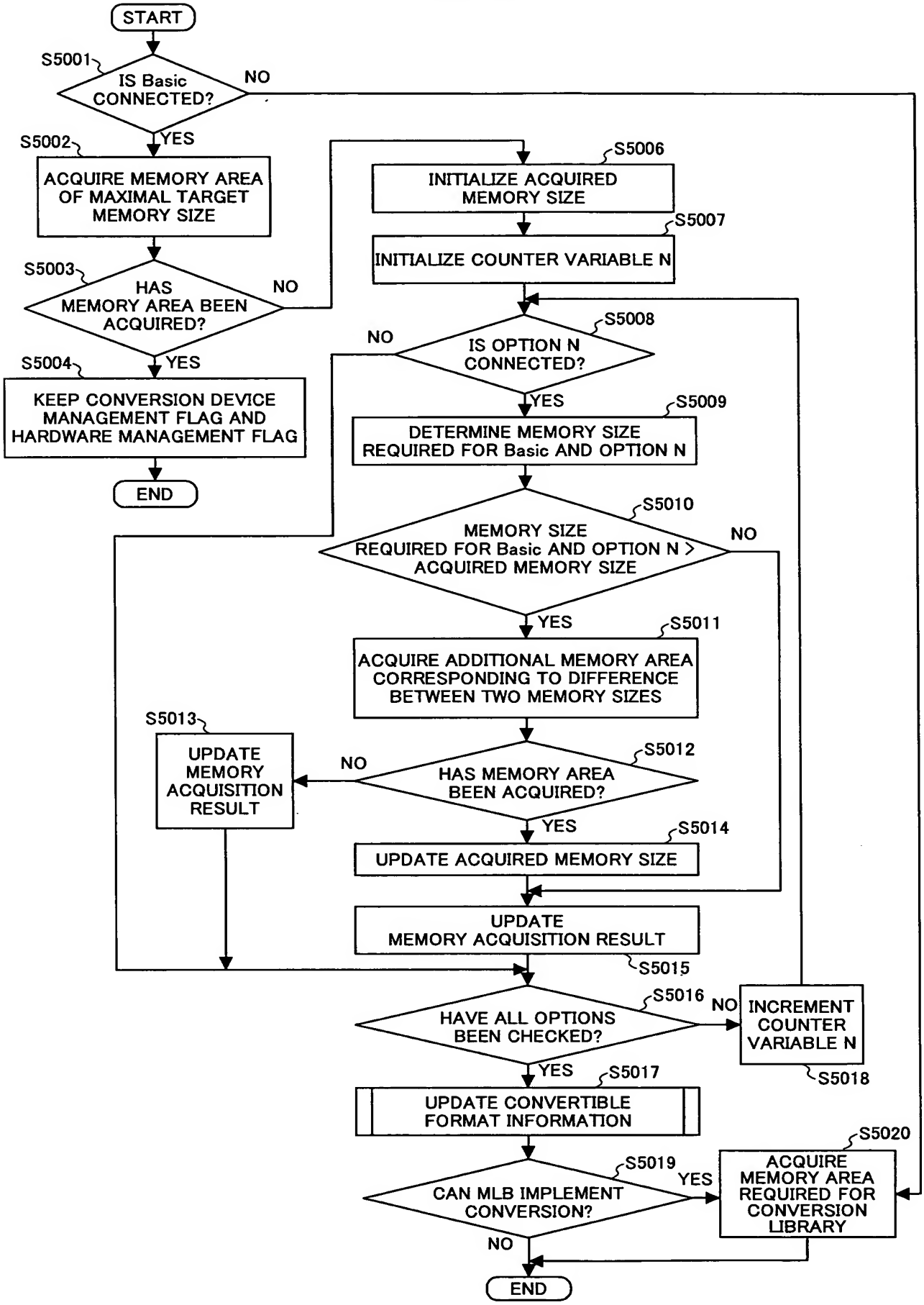

START
S5001
IS Basic CONNECTED?
NO
YES
S5002
ACQUIRE MEMORY AREA OF MAXIMAL TARGET MEMORY SIZE
S5003
HAS MEMORY AREA BEEN ACQUIRED?
NO
YES
S5004
KEEP CONVERSION DEVICE MANAGEMENT FLAG AND HARDWARE MANAGEMENT FLAG
END
S5006
INITIALIZE ACQUIRED MEMORY SIZE
S5007
INITIALIZE COUNTER VARIABLE N
S5008
IS OPTION N CONNECTED?
NO
YES
S5009
DETERMINE MEMORY SIZE REQUIRED FOR Basic AND OPTION N
S5010
MEMORY SIZE REQUIRED FOR Basic AND OPTION N > ACQUIRED MEMORY SIZE
NO
YES
S5011
ACQUIRE ADDITIONAL MEMORY AREA CORRESPONDING TO DIFFERENCE BETWEEN TWO MEMORY SIZES
S5012
HAS MEMORY AREA BEEN ACQUIRED?
NO
S5013
UPDATE MEMORY ACQUISITION RESULT
YES
S5014
UPDATE ACQUIRED MEMORY SIZE
UPDATE MEMORY ACQUISITION RESULT
S5015
S5016
HAVE ALL OPTIONS BEEN CHECKED?
NO
INCREMENT COUNTER VARIABLE N
S5018
YES
S5017
UPDATE CONVERTIBLE FORMAT INFORMATION
S5019
CAN MLB IMPLEMENT CONVERSION?
YES
S5020
ACQUIRE MEMORY AREA REQUIRED FOR CONVERSION LIBRARY
NO
END

FIG.24

	CONNECTION STATUS				
	Basic	Option P	Option Q	MEMORY SIZE	MEMORY ACQUISITION RESULT
Type A	○	○	○	9M	×
Type B	○	○	×	7M	×
Type C	○	×	○	6M	○
Type D	○	×	×	4M	○
Type E	×	×	×	32k	○

FIG.25

	Basic	Option P	Option Q	DETERMINATION RESULT
Format A	○	○	×	×
Format B	○	×	×	○
Format C	○	○	×	×
Format D	○	×	×	○
Format E	○	×	○	○
Format F	○	×	○	○